CLAIMS

What is claimed is:

Sub A1

1. A method for communicating between a user terminal and multiple stratospheric transponder platforms comprising the following steps:

maintaining stratospheric transponder platforms in a substantially fixed position with respect to a user terminal antenna coupled to a user terminal; and

communicating between the user terminal and at least two of the stratospheric transponder platforms concurrently.

2. The method of Claim 1 wherein the user terminal communicates with the at least two of the stratospheric transponder platforms using the same frequency band.

3. The method of Claim 1 wherein the user terminal communicates with one of the at least two of the stratospheric transponder platforms at a first data rate and with another of the at least two of the stratospheric transponder platforms at a second data rate.

4. The method of Claim 1 wherein the user terminal communicates with a first Internet router via one of the at least two of the stratospheric transponder platforms and with a second Internet router via another of the at least two of the stratospheric transponder platforms.

5. The method of Claim 1 wherein the user terminal communicates with a first media service provider via one of the at least two of the stratospheric transponder platforms and with a second media service provider via another of the at least two of the stratospheric transponder platforms.

6. A communications system for communicating between a user terminal and multiple stratospheric transponder platforms comprising:

a user terminal antenna coupled to a user terminal; and

a plurality of stratospheric transponder platforms having a substantially fixed position with respect to the user terminal antenna for communicating between the user terminal and each of the plurality of stratospheric transponder platforms concurrently.

7. The communications system of Claim 6 wherein the user terminal antenna communicates with at least two of the plurality of stratospheric transponder platforms using the same frequency band.

8. The communications system of Claim 6 wherein the user terminal antenna communicates with one of the plurality of stratospheric transponder platforms at a first data rate and with another of the plurality of stratospheric transponder platforms at a second data rate.

9. The communications system of Claim 6 wherein the user terminal antenna communicates with one of a plurality of Internet routers via one of the plurality of stratospheric transponder platforms and with another of the plurality of Internet routers via another of the plurality of stratospheric transponder platforms.

10. The communications system of Claim 6 wherein the user terminal antenna communicates with one of a plurality of communications service providers via one of the plurality of stratospheric transponder platforms and with another of the plurality of communications service providers via another of the plurality of stratospheric transponder platforms.

11. The communications system of Claim 6 wherein the user terminal antenna comprises:

a single antenna reflector having a focal length and a focal point;

and at least two feedhorns coupled to the single antenna reflector for forming multiple beams.

12. The communications system of Claim 11 wherein the at least two feedhorns are coupled to the single antenna reflector at a distance substantially equal to the focal length and are offset from the focal point by a distance selected to form the multiple beams.

13. The communications system of Claim 11 wherein the multiple beams are equally spaced.

14. The communications system of Claim 11 wherein one of the at least two feedhorns is a stepped feedhorn.

15. The communications system of Claim 11 wherein one of the at least two feedhorns is a stepped and tapered feedhorn.

16. The communications system of Claim 11 wherein at least one of the multiple beams has a half-power beam width substantially equal to twice an orbit angle subtended by a stratospheric platform.

17. The communications system of Claim 11 wherein the stratospheric transponder platforms have a platform spacing selected to maintain a signal-to-interference ratio of at least 20 dB.

18. The communications system of Claim 11 wherein the stratospheric transponder platforms have an orbit diameter selected to maintain the stratospheric transponder platforms respectively near a peak of each of the multiple beams.

19. The communications system of Claim 11 wherein the multiple beams have a spacing such that the signal-to-interference ratio between beams is at least 20 dB.

20. A method for communicating between a user terminal and multiple stratospheric transponder platforms comprising the following steps:

maintaining a plurality of stratospheric transponder platforms at a substantially constant platform altitude, platform spacing, and platform orbit diameter; and

communicating between each of the plurality of stratospheric transponder platforms and a user terminal on multiple beams concurrently via a user terminal antenna coupled to the user terminal.

21. The method of Claim 20 wherein the step of communicating comprises communicating between the user terminal and each of the plurality of stratospheric transponder platforms using the same frequency band.

22. The method of Claim 20 further comprising the step of separating the multiple beams such that the signal-to-interference ratio between any two of the multiple beams is at least 20 dB.

23. The method of Claim 20 wherein the platform separation is at least two half-power beam widths.

24. The method of Claim 21 wherein the platform orbit diameter is selected to maintain each of the stratospheric transponder platforms near a peak of the multiple beams respectively.

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